

Which Is the Best Ram in the Sale?

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You are at a consignment sheep sale (not a sale barn or a terminal livestock auction, but a sale specifically for breeding sheep). You are there to buy a ram. You feel like a kid in an Apple Store (or for those of you of a different vintage, a kid in a candy shop). There are so many rams to choose from, but you can only buy one. The question is, “Which is the best ram in the sale?”

Just how important is a ram?

To set the stage for your ram buying excursion, and to help you justify the money you are about to spend, let's first consider the importance of this purchase.

The buying decisions you make now can have a big impact on future production of your sheep flock. The ram you select can increase, maintain, or (hopefully not) decrease your flock's performance.

If you purchase a ram for use as a terminal sire (that is, a ram that can sire crossbred lambs that will reach a desired market weight quickly and efficiently), he will end up being *half* of your flock. The ram you purchase will contribute half of the production efficiency of every lamb. And, he will sire many lambs while each of your ewes will likely only produce two or three lambs during the year. It does not take too many pounds of lamb to justify using a high quality ram as opposed to an average one.

If you purchase a ram for producing replacement ewes, his genetic contribution will be even greater. You buy fewer rams than ewes, and the genes from these rams will be distributed far more widely in your flock than those of individual ewes. Your flock may live with these genes for many generations. In fact, after a few generations (Figure 1), the genes from these rams will contribute **80 to 90%** of your flock's genetic change.

The greatest impact on sheep performance can be made through ram selection.

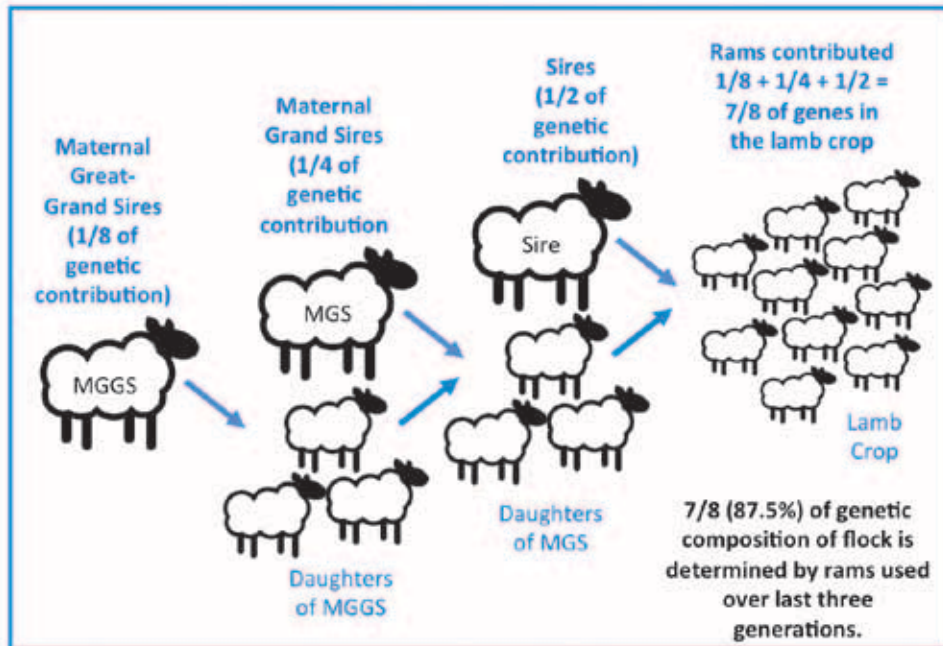


Figure 1. Genetic Change Is Largely Driven by Rams when Replacement Ewes are Produced in the Flock

How much should you pay for a ram?

It is always difficult to determine how much money you can justify paying for a ram. It really depends on what the ram can and will be used for. Even though they may be of equal genetic merit, registered rams that will be used in a purebred operation will have a different value than commercial rams that will be used to sire slaughter lambs. **A general rule of thumb is that a high quality, commercial ram is worth four to five times the value per hundredweight (cwt) of a slaughter lamb.** Thus, if lambs sell for \$150 to \$160 per cwt, you should expect to pay \$500 to \$800 for a ram.

Remember, the ram will contribute 50% of the genetics of the lamb crop. If daughters are saved as replacements, then his influence may contribute to the genetics of your flock for years or generations. Also, a ram can affect management inputs at breeding, at lambing, and throughout the growth cycle of his lambs. Thus, the genetic value of a ram is high. You should expect to pay for that value. **Nearly always the best ram will prove to be the cheapest.** Likewise, a poor ram will certainly be the most expensive.

Do a little homework on what rams are worth before embarking on a ram

spending spree. There are many internet sites that report the price of feeder and slaughter lambs. In addition, many purebred operations advertise commercial rams, often listing sale prices online and in trade magazines. Results of previous sales may also be posted.

Which is the best ram for my flock?

Now back to the original question: Which is the best ram in the sale? The answer is not as easy as you might think. First, rephrase the question: **Which is the best ram for my flock?** Now the question is in the proper context. Next, consider your breeding objectives. Spend a few minutes writing down precise goals, including desired levels of performance and the time frame for achieving them.

To make intelligent ram purchasing decisions, you must have an idea of what it is you want to produce. Without an end product in mind at the time of selection, it will be difficult to select a ram that will increase profitability.

Consider the following questions:

- Are you purchasing a terminal sire?
- How will you market the resulting lamb crop? At weaning? As lightweight ethnic lambs? As traditional heavyweight slaughter lambs?

- Will replacement ewe lambs be retained in the flock?
- What trait(s) do you want to improve and what trait(s) do you want to maintain at current levels?

Answers to these questions will serve as the basis for sire selection and provide direction as to traits with the most economic importance.

How are potential sires evaluated?

With your breeding objectives in mind, you are now ready to evaluate rams in the sale. Obviously, the most immediate job of rams is to get ewes pregnant, but the most important selection criterion is the anticipated performance of their progeny relative to those traits that are most economically important to your flock.

Some tips:

- Use all of the information available to you. This includes (arranged in order of increasing intensity and accuracy) pedigree, visual appraisal, measurement of individual performance, and estimated breeding values. The more information you have, the better your selection decision will be. Never buy a ram on sight alone. Always request performance data.
- Select rams of multiple births. Progress can be made in increasing lambing percentage by selecting for twinning.
- Select fast-gaining rams that meet your other standards. These animals usually make the most efficient use of feed and can be marketed at younger ages.
- Select rams that are structurally sound. Rams should stand squarely on their feet. They should have short, strong pasterns, and straight legs with plenty of width between them.
- Select rams with adequate scrotal circumference.
- Select rams with good dispositions. While the temperament is not important to the reproductive success of your ram, it is important to your management system and should be kept in mind when purchasing a ram.

The goal is to maximize the chance that selected rams will improve flock per-



Figure 2. Five Hampshire Ram Lambs Available for Purchase at a Consignment Sale.

formance. This is where you need to understand both the genetic and non-genetic factors that can affect performance. For example, a single-born lamb from a mature ewe born early in the lambing season is likely to be heavier than a twin lamb from a two-year-old ewe born late in the lambing season. It is simply a case of a higher level of nutrition at a critical time in the lamb's life. But, is this single lamb genetically any better than the twin lamb? Modern genetic evaluations (such as the National Sheep Improvement Program or NSIP) correct for these non-genetic effects so they do not cause biases in our evaluation.

What if you were in one of these situations?

You have a commercial Hampshire flock of 50 ewes. You have evaluated your flock's production records and your primary goal is to find a Hampshire ram that will transmit high genetic values for growth traits. The ram you purchase will be used to sire market lambs and to produce some replacement ewes. You lamb in January/February and lambs are marketed in the spring as traditional, heavyweight slaughter lambs.

Arriving at the consignment sale, you head out to the sale pens. Five commercial Hampshire ram lambs have been consigned by a breeder you consider to be reputable, whose sheep are generally of high

quality, and who is known for maintaining good and dependable records. Consider what you would do in the three situations below.

Situation A. Visual Appraisal Only

In this situation, all you have are the ram lambs in the pens in front of you (Figure 2). No performance data are available. The seller explains he got busy with other farm operations and just didn't have time to collect data on these five rams. That is the primary reason he is marketing them as commercial rams. **What do you do?**

You can inspect each ram for structural soundness and condition as these characteristics relate to the ram's ability to serve ewes and its longevity in your flock. You can evaluate scrotal circumference, which is one of the most useful measures of a ram's breeding ability (a ram lamb of this age should have a scrotal circumference of at least 30 cm). You can eliminate any of the rams that do not meet your specifications. After that, it's a gamble.

Remember, what you see is not always what you get. Less than half of what can be seen visually is due to genetic differences. The rest (over half) is due to what we geneticists call **environmental differences**. Was the biggest ram a single? Was the smallest ram out of a two-year-old ewe lambing for the first time? Did one ram eat more feed? The only portion of a ram's su-

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periority that can be passed on to its progeny is the portion that is due to genetic differences. In many cases, these differences are masked by environmental differences. Knowing this, you conclude that picking the best ram for improving traits like lambing percentage, weaning weight, and so forth by visual appraisal alone is not likely. *It's too big a gamble, so you may choose not to bid on any of these rams.*

Situation B. Incorporating Individual Performance Data with Visual Appraisal

In this situation you have the five ram lambs in the pens in front of you (Figure 2) and you have individual performance data on each of them (Table 1). The seller explains that although he kept records on these rams, their records were accidentally omitted from the flock records he submitted to NSIP. **Now, what do you do?**

You visually inspect the rams, just as you did in Situation A. Any that don't meet structural specifications are eliminated. Then, you study the performance data for

Table 1. Individual Performance Data for Five Hampshire Ram Lambs Available for Purchase at a Consignment Sale.

Ram Lamb ID	Birth Date	Dam Age	Sire ID	Birth Weight (lb)	Type of Birth/Rearing	Weaning Age (d)	Adjusted Weaning Weight (lb)	Post-weaning ADG (lb/d)	Adjusted 120-d Weight (lb)
6316	1/9	5	Miller 833	16.0	Tw/Tw	71	63.4	1.64	145
6335	1/9	5	UK 5688	13.6	Tw/Tw	71	63.2	1.23	125
6336	1/9	5	UK 5688	15.3	Tw/Tw	71	66.9	1.46	139
6338	1/9	5	UK 5688	16.0	Tw/Tw	71	65.9	1.53	141
6415	1/12	3	UK 5725	16.8	S/S	74	74.5	1.08	115

the remaining rams (Table 1).

The performance data in Table 1 is useful if the following applies:

- Rams received equal nutrition and were managed the same.
- Traits measured are heritable. Traits that are highly heritable are those where individual selection will be most successful. Generally, reproductive traits are lowly heritable and growth traits are moderately heritable.
- Weaning records take into account birth and rearing status of the individual (for example, born and raised a single, born and raised a twin) as well as age of the dam (for example, two-year-old ewe versus mature ewe). If the breeder does not provide this information, then you will almost certainly favor the single lambs reared by mature ewes. This will be at the expense of the genetically heavier rams that happen to be lighter because they were twins or born to yearling ewes. In this situation, adjusted weights are provided. (For more information on adjustment factors, see *Genetically Speaking, Hoofprint, Volume 5, Fall 2011.*)

With this additional information, you may choose to bid on one of the twin ram lambs with good individual growth performance (Ram #6316, #6336, or #6338), assuming structural specifications were met. Even if his post weaning performance had been better, Ram #6415 would not have made your bidding group because he is a single-born lamb.

Keep in mind, performance data like those in Table 1 are useful but are very limited in value; they only apply to that individual ram in that particular production

system and do not necessarily indicate that ram's genetic potential as a sire. So, it's still a gamble, but you a little more confidence in the outcome.

Situation C. Incorporating Estimated Breeding Values (EBVs) with Visual Appraisal and Individual Data

In this situation you have it all: visual appraisal, individual data, and estimated breeding values along with their accuracies (Table 2). **Now, what do you do?**

Comparing the five ram lambs is easier and more accurate now that you have their EBVs for growth traits because non-genetic differences, such as those associated with nutrition and management, have been removed. You could also compare these rams with those from different breeders (whether at opposite sides of the country or having had quite different management) if they all provide EBVs for the same trait. If breeders do not provide EBVs, it is hard to determine which are the best rams within the breeder's flock and also how they compare to rams from other breeders.

Of the five rams, you eliminate any that do not meet specifications for structural soundness. You also eliminate the single-born ram lamb (#6415). Finally, eliminate any rams that have very low EBVs for growth traits, which, as noted earlier, are your primary concern. Now, you have reduced your bidding group to the two rams that have the greatest likelihood of improving your flock's growth performance: Rams #6338 and #6316. Now, be realistic in the price you may need to pay, as others will also want the higher performing rams.

Ram selection is much less of a gamble in Situation C. Not only do you have predictions of each ram's future offspring performance, you also have a measure of confidence associated with each prediction.

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Table 2. Estimated Breeding Values (EBVs) and Accuracies (ACC) for Five Hampshire Rams Available for Purchase at a Consignment Sale*.

Lamb ID	BWT		WWT		PWWT		MWWT	
	ACC	EBV (kg)	ACC	EBV (kg)	ACC	EBV (kg)	ACC	EBV (kg)
6316	59	0.21	55	3.5	69	4.2	44	0.0
6335	59	0.11	55	2.6	68	3.3	43	0.4
6336	59	0.08	55	0.3	68	0.5	43	0.6
6338	59	0.20	58	3.9	67	5.6	47	-1.0
6415	59	0.37	57	2.7	67	1.2	48	-0.3

* BWT = Birth Weight EBV; it predicts difference in offspring weight at birth (to a point, smaller is better).

WWT = Weaning Weight EBV; it predicts differences in offspring live weight at 60 days of age (bigger is better).

PWWT = Post Weaning Weight EBV; it predicts offspring differences for post weaning weight at 120 days (bigger is better).

MWWT = Maternal Weaning Weight EBV; it predicts differences in offspring from daughters based upon the maternal ability of the daughters and is expressed as kilograms of live weight at weaning (bigger is better).

Each trait EBV for a particular animal has as accuracy value (ACC) that is an expression of whether the EBV is representative of the animal's true breeding value. Accuracy values are on a scale of 0 to 100; the higher the accuracy, the more confident we are in the EBV.

Commercial sheep producers should not overanalyze accuracy values when making breeding decisions. Selecting rams that have high predicted genetic merit is more important than selecting rams with high accuracies.

What's an EBV worth?

When selecting a ram, your focus is how he will increase profitability of your sheep enterprise. For the five ram lambs above (Situations A, B, and C), the genetic traits that can increase profitability are the growth traits of weaning weight (WWT) and post weaning weight (PWWT). These are expressed in kilograms of live weight at weaning and post weaning at 120 days of age.

For example, Ram #6338 has the highest PWWT EBV at 5.6 kg. His offspring are expected to receive roughly one-half of his genes. Therefore, we would expect his lambs to be 2.8 kg (6.2 lb) heavier than average at this weight. If this ram sires 100 lambs, that equates to an additional 620 pounds of lamb. If each lamb brings \$200/cwt (this value will fluctuate throughout the year and from year to year), that is an additional \$1,240 just based on the genetics of the ram used.

Contrast this with Ram #6415. He has the lowest EBV for PWWT, only 1.2 kg. We would expect each of his lambs to be only

0.6 kg (1.3 lb) heavier than average at this weight. If this ram sires 100 lambs, that is an additional 130 pounds of lamb. If each lamb brings \$200/cwt, that is only an additional \$260.

On the average, lambs sired by Ram #6338 are expected to weigh 4.9 lb (6.2 lb -1.3 lb) more at 120 days of age than lambs sired by Ram #6415. This translates to a difference of \$980 in favor of Ram #6338. Clearly, you could afford to bid more for him.

For more information on EBVs, EPDs, and NSIP, see *Genetically Speaking, Hoof-Print, Volume 6, Winter 2012*.

What is the right ram for your flock?

The right ram for your flock may not be the most popular, or at the top of the sale order. But, through strategizing properly, a ram that will fit the needs of your flock can be successfully identified and purchased. Performance data that allow you to assess key performance indicators, such as pounds of lamb weaned per ewe exposed, lamb growth performance, and returns on a per ewe basis are necessary for buying the right ram.

So, happy ram hunting. And, don't forget the old adage,

*Good sheep ain't cheap.
Cheap sheep ain't good.*

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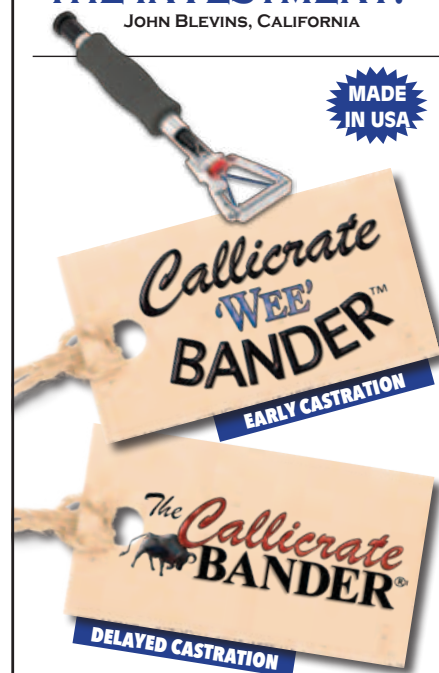
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